

## GEPHE SUMMARY

RPP5 ( <a href="https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPP5~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Gene+Gephebase~RPP5~#gephebase-summary-title</a> )	Gephebase Gene	GP00001009	GepheID
Published	Entry Status	Martin	Main curator

## PHENOTYPIC CHANGE

Physiology ( <a href="https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait+Category=~Physiology~#gephebase-summary-title</a> )	Trait Category		
Pathogen resistance ( <a href="https://www.gephebase.org/search-criteria?/and+Trait=~Pathogen+resistance~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Trait=~Pathogen+resistance~#gephebase-summary-title</a> )	Trait		
Arabidopsis thaliana- Col0 - resistant	Trait State in Taxon A		
Arabidopsis thaliana- Ler-0 - resistant	Trait State in Taxon B		
Data not curated	Ancestral State		
Intraspecific ( <a href="https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxonomic+Status=~Intraspecific~#gephebase-summary-title</a> )	Taxonomic Status		
	Taxon A		Taxon B
Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )	Latin Name	Arabidopsis thaliana ( <a href="https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title">https://www.gephebase.org/search-criteria?/and+Taxon+and+Synonyms=~Arabidopsis+thaliana~#gephebase-summary-title</a> )	Latin Name
thale cress	Common Name	thale cress	Common Name
thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms	thale cress; mouse-ear cress; thale-cress; Arabidopsis thaliana (L.) Heynh.; Arabidopsis thaliana (thale cress); Arabidopsis_thaliana; Arbisopsis thaliana; thale kress	Synonyms
species	Rank	species	Rank
cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage	cellular organisms; Eukaryota; Viridiplantae; Streptophyta; Streptophytina; Embryophyta; Tracheophyta; Euphyllophyta; Spermatophyta; Magnoliophyta; Mesangiospermae; eudicotyledons; Gunneridae; Pentapetalae; rosids; malvids; Brassicales; Brassicaceae; Camelineae; Arabidopsis	Lineage
Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a> )	Parent	Arabidopsis () - (Rank: genus) ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3701</a> )	Parent
3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a> )	NCBI Taxonomy ID	3702 ( <a href="https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702">https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id=3702</a> )	NCBI Taxonomy ID
Yes	is Taxon A an Intraspecies?	Yes	is Taxon B an Intraspecies?
Arabidopsis thaliana- Col0 - resistant	Taxon A Description	Arabidopsis thaliana- Ler-0 - resistant	Taxon B Description

## GENOTYPIC CHANGE

RPP5	Generic Gene Name	F4JNB7 ( <a href="http://www.uniprot.org/uniprot/F4JNB7">http://www.uniprot.org/uniprot/F4JNB7</a> )	UniProtKB Arabidopsis thaliana
DISEASE RESISTANCE PROTEIN RPP5; DL4505C; FCAALL.315; RECOGNITION OF PERONOSPORA PARASITICA 5; At4g16950; dl4505c	Synonyms	AK226966 ( <a href="https://www.ncbi.nlm.nih.gov/nucore/AK226966">https://www.ncbi.nlm.nih.gov/nucore/AK226966</a> )	GenebankID or UniProtKB
3702.AT4G16950.1 ( <a href="http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16950.1">http://string-db.org/newstring.cgi/show_network_section.pl?identifier=3702.AT4G16950.1</a> )	String		
-	Sequence Similarities		
GO:0005524 : ATP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0005524">https://www.ebi.ac.uk/QuickGO/term/GO:0005524</a> )	GO - Molecular Function		
GO:0000166 : nucleotide binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0000166">https://www.ebi.ac.uk/QuickGO/term/GO:0000166</a> )			
GO:0043531 : ADP binding ( <a href="https://www.ebi.ac.uk/QuickGO/term/GO:0043531">https://www.ebi.ac.uk/QuickGO/term/GO:0043531</a> )			

GO - Biological Process

GO:0006952 : defense response (<https://www.ebi.ac.uk/QuickGO/term/GO:0006952>)  
 GO:0007165 : signal transduction (<https://www.ebi.ac.uk/QuickGO/term/GO:0007165>)  
 GO:0009817 : defense response to fungus, incompatible interaction  
 (<https://www.ebi.ac.uk/QuickGO/term/GO:0009817>)

GO - Cellular Component

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No (<https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title>) Presumptive Null

Gene Amplification (<https://www.gephebase.org/search-criteria?/and+Molecular Type=^Gene Amplification^#gephebase-summary-title>) Molecular Type

Complex Change (<https://www.gephebase.org/search-criteria?/and+Aberration Type=^Complex Change^#gephebase-summary-title>) Aberration Type

Partial duplication sufficient to increase resistance Molecular Details of the Mutation

Linkage Mapping (<https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Linkage Mapping^#gephebase-summary-title>) Experimental Evidence

The Arabidopsis downy mildew resistance gene RPP5 shares similarity to the toll and interleukin-1 receptors with N and L6. (1997) (<https://pubmed.ncbi.nlm.nih.gov/9212464>) Main Reference

Parker JE; Coleman MJ; Szab<sup>2</sup> V; Frost LN; Schmidt R; van der Biezen EA; Moores T; Dean C; Daniels MJ; Jones JD Authors

Plant disease resistance genes operate at the earliest steps of pathogen perception. The Arabidopsis RPP5 gene specifying resistance to the downy mildew pathogen *Peronospora parasitica* was positionally cloned. It encodes a protein that possesses a putative nucleotide binding site and leucine-rich repeats, and its product exhibits striking structural similarity to the plant resistance gene products N and L6. Like N and L6, the RPP5 N-terminal domain resembles the cytoplasmic domains of the *Drosophila* Toll and mammalian interleukin-1 transmembrane receptors. In contrast to N and L6, which produce predicted truncated products by alternative splicing, RPP5 appears to express only a single transcript corresponding to the full-length protein. However, a truncated form structurally similar to those of N and L6 is encoded by one or more other members of the RPP5 gene family that are tightly clustered on chromosome 4. The organization of repeated units within the leucine-rich repeats encoded by the wild-type RPP5 gene and an RPP5 mutant allele provides molecular evidence for the heightened capacity of this domain to evolve novel configurations and potentially new disease resistance specificities. Abstract

Genome-wide survey of Arabidopsis natural variation in downy mildew resistance using combined association and linkage mapping. (2010) (<https://pubmed.ncbi.nlm.nih.gov/20479233>) Additional References

RELATED GEPHE

20 (ACD6 - ACCELERATED CELL DEATH 6, ERECTA, RAC1, Resistance related Kinase 1 (RKS1), RLM1, RLM2 cluster, RLM3, RPM1, RPP1-WsA, RPP1-WsB, RPP1-WsC, RPP13, RPP2A-RPP2B, RPP4, RPP8, RPS2, RPS4, RPS5, RRS1, WRR4) (<https://www.gephebase.org/search-criteria?/or+Taxon ID=^3702^/and+Trait=Pathogen resistance/and+groupHaplotypes=true#gephebase-summary-title>) Related Genes

1 (<https://www.gephebase.org/search-criteria?/or+Gene Gephebase=^RPP5^/and+Taxon ID=^3702^/or+Gene Gephebase=^RPP5^/and+Taxon ID=^3702^#gephebase-summary-title>) Related Haplotypes

EXTERNAL LINKS

COMMENTS